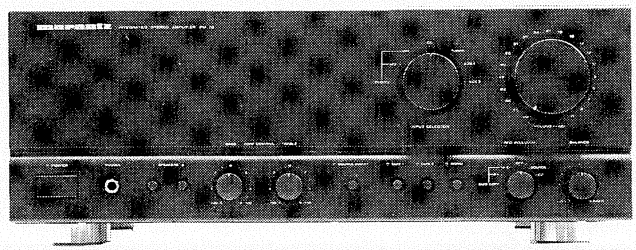
MARA-00552

# Service Manual

## 74 PM72/00B/01B/02B /01G/02G

## Integrated stereo amplifier



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marantz®

# model PM-72


4822 725 50954

First issue: 1991

MZ 3005

## MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound.
Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available to our National Marantz Subsidiary or Agent.

### ORDERING PARTS:

Parts can be ordered either by mail or by telex. In both cases, correct part number has to be specified.
The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or telex must be signed otherwise such part order will be considered as null and void.

MARANTZ INTERNATIONAL
Vestdijk 9
5600 MD Eindhoven
The Netherlands
Phone: +31/40.758290
Telefax: +31/40.75.82.99
Telex: 35000 PHTC NL routing IND NLMTFAT

### PARTS ORDERING

Parts may be ordered at the following addresses:

**AUSTRIA**
HORNYPHON
Vertriebsgesellschaft GmbH
Wienerbergstrasse 1
A 1101 Wien
Austria
Telex: 132.332

**BELGIUM**
SVD DIVISION MARANTZ
Industrialaan 1
1720 Groot-Bijgaarden
Belgium
Telex: 24466

**CHILE**
MARANTZ
DIVISION OF PHILIPS S.A.
AV. Santa Maria, 0760
Casilla 2687
Santiago
Telex: 240.239

**DENMARK**
MARANTZ
DIVISION OF PHILIPS
SERVICE A/S
Prags Boulevard 80
Postbox 1919
DK-2300 København S
Denmark
Telex: 31201

**FINLAND**
MARANTZ
DIVISION OF OY PHILIPS Ab
Kaivokatu 8
00100 Helsinki
Finland
Telex: 124811

**FRANCE**
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France
Telex: 611651

**GERMANY**
MARANTZ GERMANY GmbH
Alexanderstrasse 1
2000 Hamburg
Germany

**THE NETHERLANDS**
Elpro Marantz
Wint Hontlaan 28
3526 KV Utrecht
The Netherlands
Telex: 4748

**NORWAY**
MARANTZ
DIVISION OF PHILIPS A/S
Sandstuveien 40
0680 Oslo 6
Norway
Telex: 72640

**GREAT BRITAIN**
MARANTZ AUDIO U.K. Ltd
Unit 15/16
Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

**GREECE**
SHERTON ELECTRONICS S.A.
P.O.Box 21025
Hippocratus Street 188
Athens 11471
Greece
Telex: 216.795

**JAPAN**
MARANTZ JAPAN, Inc.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

**KUWAIT**
AL ALAMIAH ELECTRONICS
Ussama Building
Fahd al Saleem Street
P.O.Box 23781
Safat-Kuwait
Telex: 22694

**ITALY**
MARANTZ ITALIANA S.P.A.
Via Chiese, 74
20126 Milano
Italy

**SAUDI ARABIA**
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia
Telex: 401530

**SOUTH AFRICA**
MARANTZ
DIVISION OF PHILIPS S.A.
Main Road Martindale
P.O. Box. 58088
Newville 21114
South Africa

**SPAIN**
PHONO S.A.
Ignacio Iglesias 10
Badalona (Barcelona)
Spain
Telex: 59355

**SWEDEN**
MARANTZ
DIVISION OF PHILIPS
Försäljning AB
Tegeluddsvägen 1
S-115 84 Stockholm
Sweden
Telex: 14060

**SWITZERLAND**
MARANTZ
Technischer Service
Duenstrasse 3
3186 Düdingen
Switzerland

**TURKEY**
DOGRUOL Ltd.
I.M.C.
6 Blok N°6310
Unkapani
Istanbul
Turkey
Telex: 22085

**MALTA**
CACHIA & GALEA
Republic Street, 68D
Valetta
Telex: 1682

**PORTUGAL**
MARANTZ
Divisao philips S.A. service
Outurela-carnaxide
2795 LinDA-A-VELHA
Telex: 43906

**All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.**

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

## TECHNICAL SPECIFICATIONS (DIN)

**Power Amplifier Section**

| | | |
|---|---|---|
| IHF Dynamic Power | | |
| 2 ohms | | : 250W |
| 4 ohms | | : 170W |
| 8 ohms | | : 120W |
| Power Output Per Channel | | |
| DIN 4 ohms | 1 kHz 1% THD | : 170W |
| RMS 4 ohms | 1 kHz 0.06% THD | : 150W |
| DIN 8 ohms | 1 kHz 1% THD | : 110W |
| RMS 8 ohms | 1 kHz 0.03% THD | : 100W |
| FTC 4 ohms | 20–20 kHz 0.06% THD | : 95W |
| FTC 8 ohms | 20–20 kHz 0.03% THD | : 70W |
| Total Harmonic Distortion at 8 ohms | | : 0.008% |
| I.M. Distortion at 8 ohms | | : 0.008% |
| Damping Factor | | : 150 |
| Slew Rate | | : 70 V/μs |

**Phono Amplifier Section**

| | |
|---|---|
| MM Cartridge Input | |
| Frequency Difference | : ±0.5 dB |
| Signal to Noise Ratio (A weighted) | : 86 dB |
| Input Sensitivity | : 2.5 mm |
| Input Impedance | : 47k Ohms |
| MC Cartridge Input | |
| Input Sensitivity | : 0.25 mV |
| Input Impedance | : 100 Ohms |

**Hight Level Section**

| | | |
|---|---|---|
| Frequency Response | | : 10–70 kHz |
| Signal to Noise Ratio (A weighted) | | : 86 dB |
| Input Sensitivity | | : 150 mV |
| Input Impedance | | : 33k Ohms |
| Tape Output Level [Phono (MM) 5 mV 1 kHz Input] | | : 300 mV |
| Tape Output Impedance (Phono) | | : 220 Ohms (02B/02G – 440 Ohms) |
| Tone Control Action | 100 Hz | : ±6 dB |
| | 10 kHz | : ±6 dB |
| Channel Separation | (CD Input at 1 kHz) | : 75 dB |
| | (CD Input at 10 kHz) | : 65 dB |

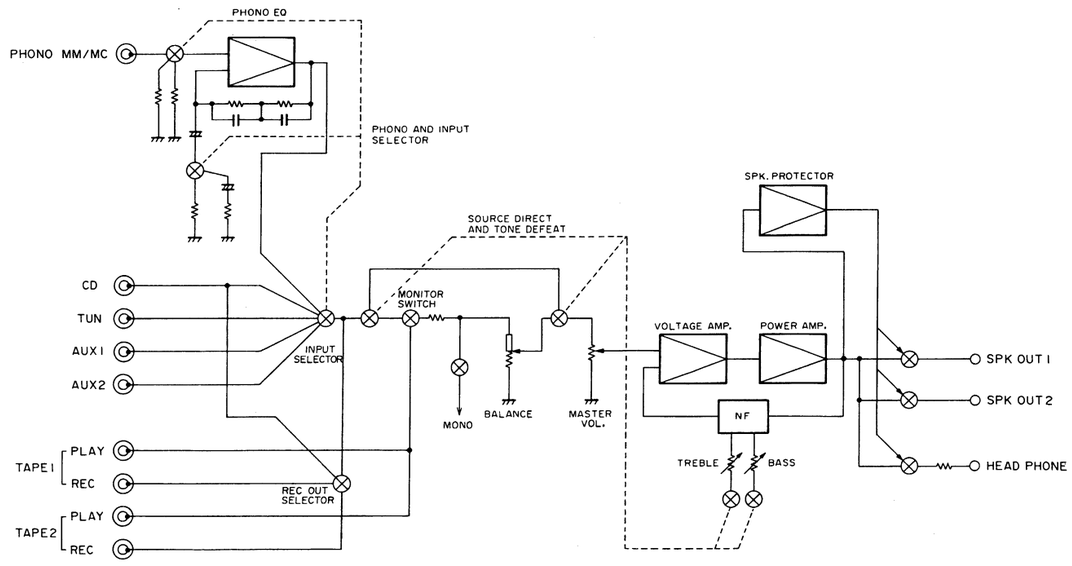
**General**

| | |
|---|---|
| Power Requirements | |
| 2 Voltage version | : 02B/02G – 230V<br>00B – 230V/240V |
| 4 Voltage version | : 01B/01G – 110V–240V |
| Power Consumption (Rated Power) | |
| AB Class Moode | : 390W |
| Dimensions | |
| Panel Width | : 420 mm |
| Panel Height | : 132 mm |
| Depth | : 334 mm |
| Weight | |
| Unit alone | : 10 kg |

Specifications and appearance are subject to change for modification without notice.



## 1. BLOCK DIAGRAM



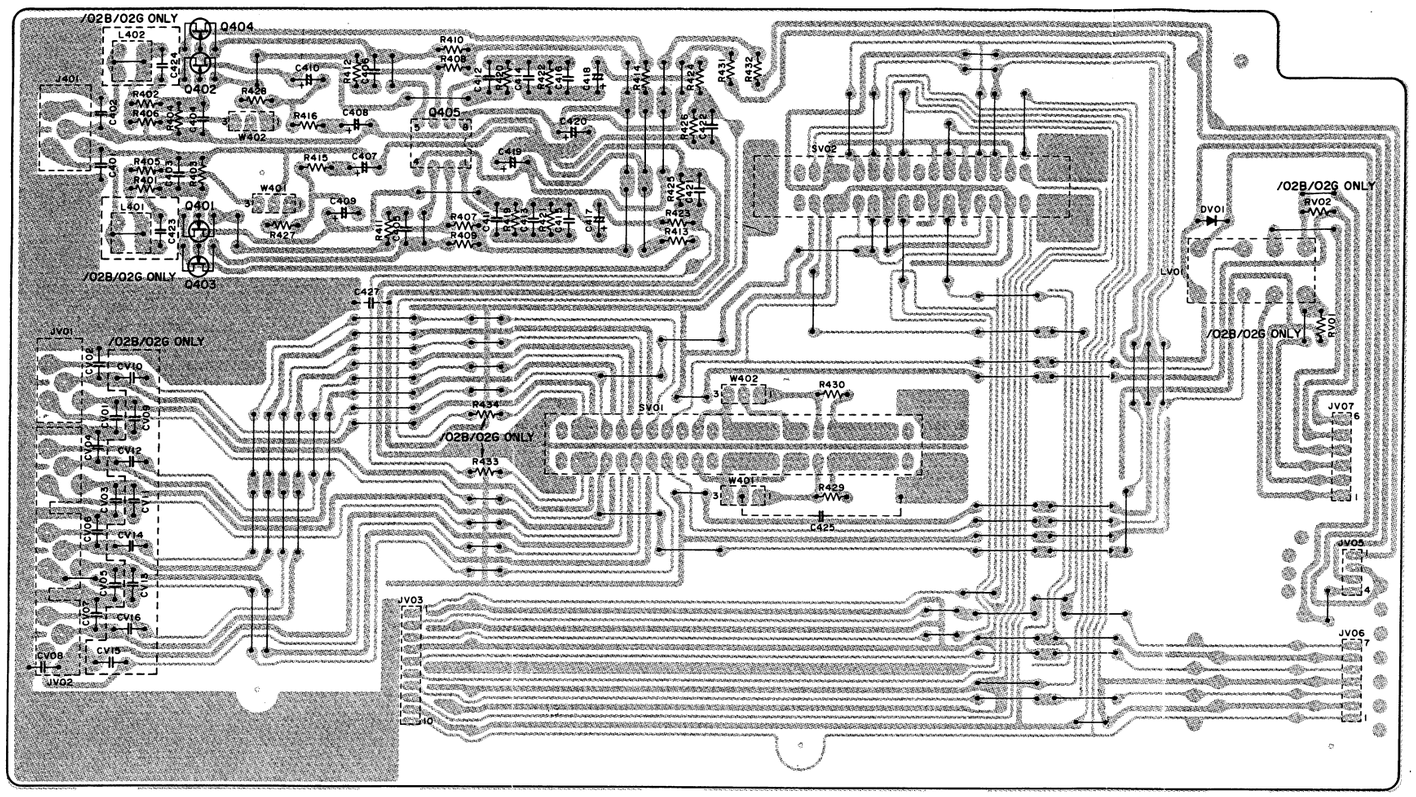




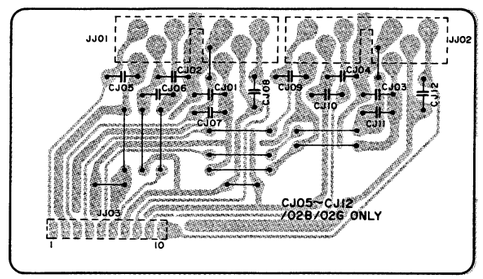

MARA-00552 / DRUCK 1

## 2. SCHEMATIC DIAGRAM AND PARTS LOCATIONS (Pattern side)

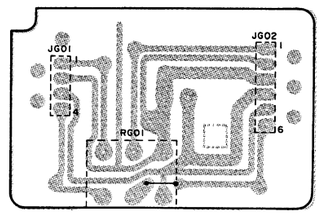
PV01



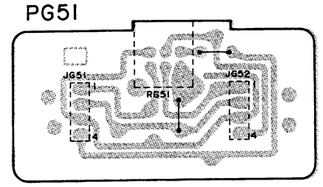

PJ01



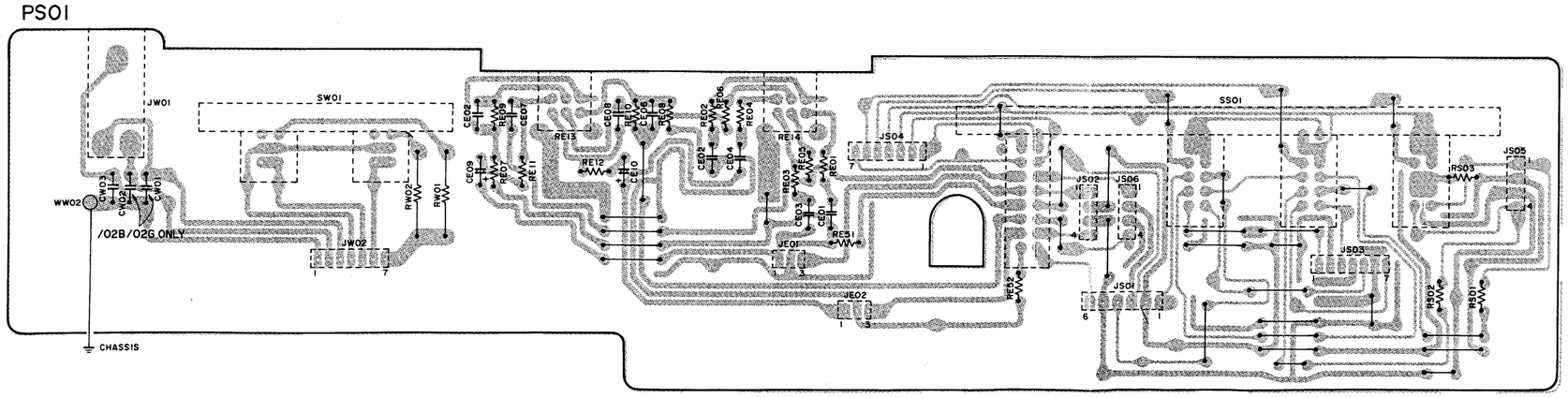

PG01



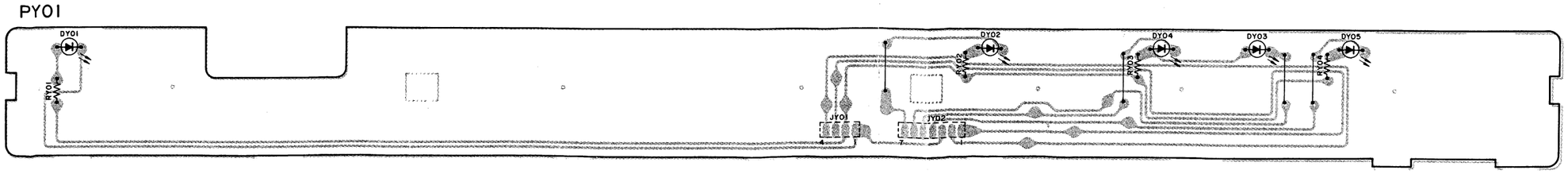

PG51




PS01

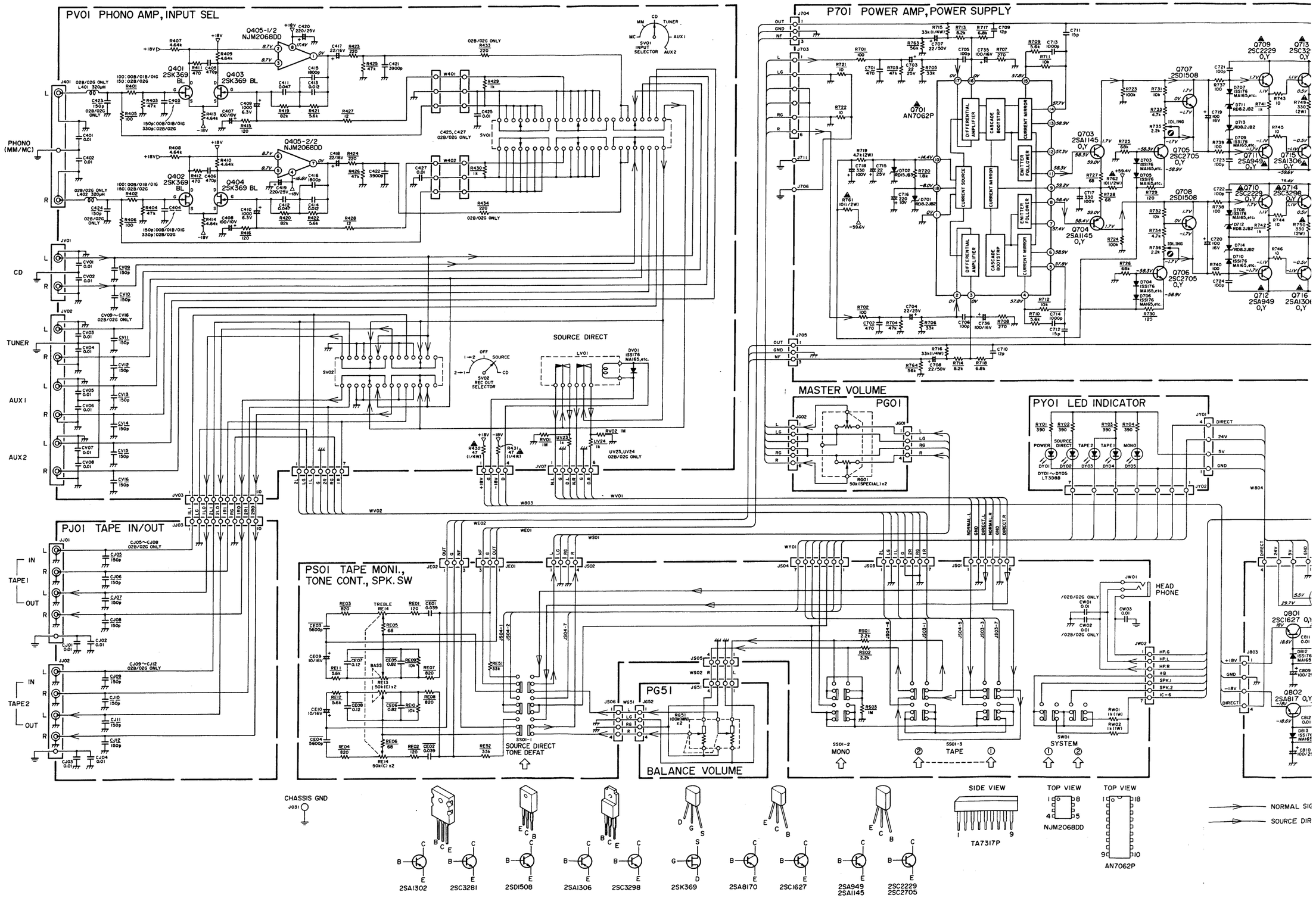


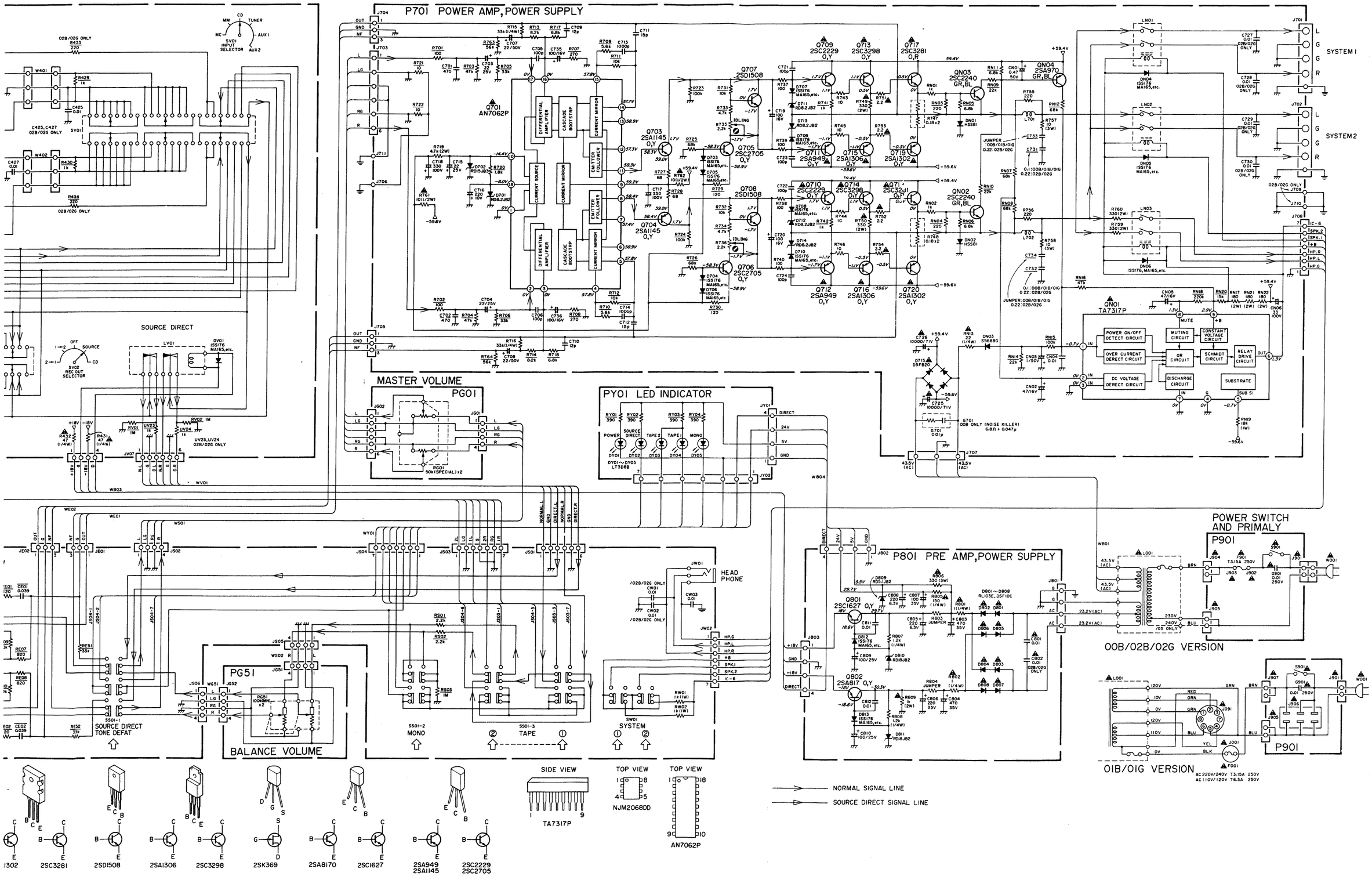

PY01



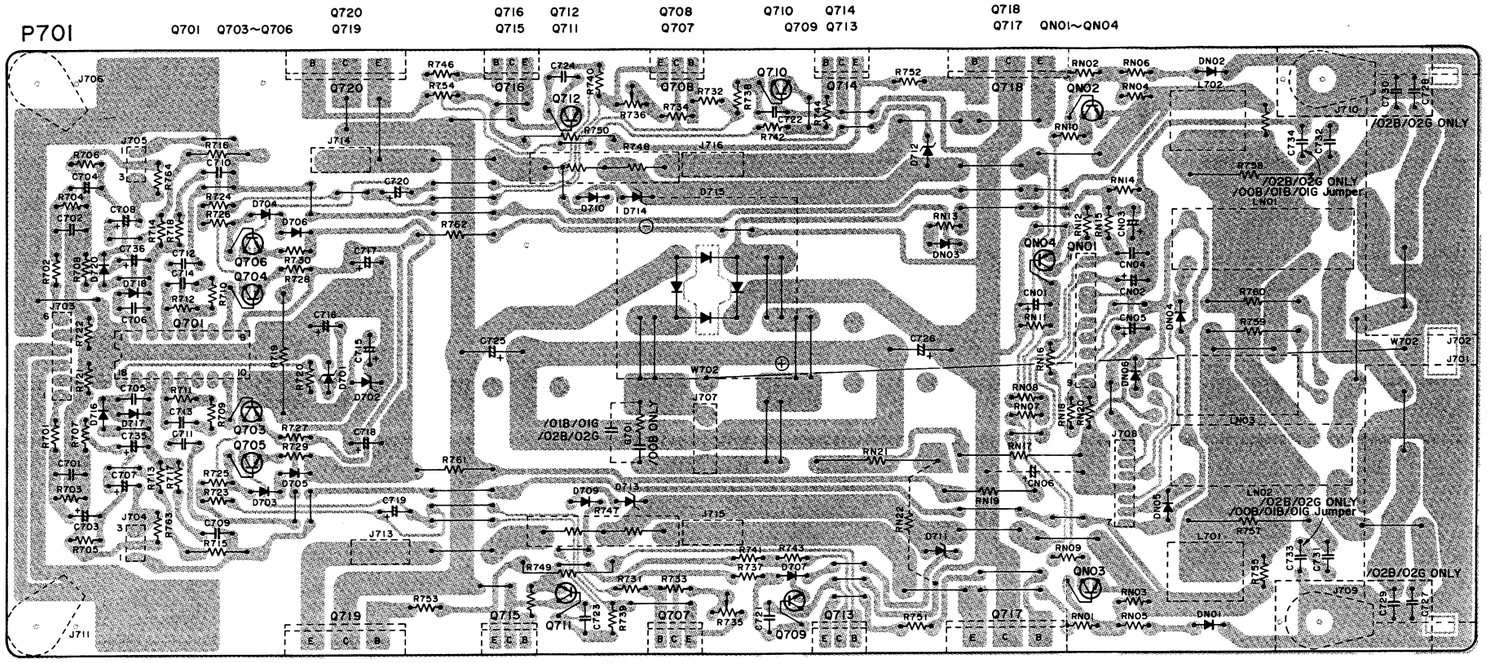



MARA-00552 / DRUCK 2

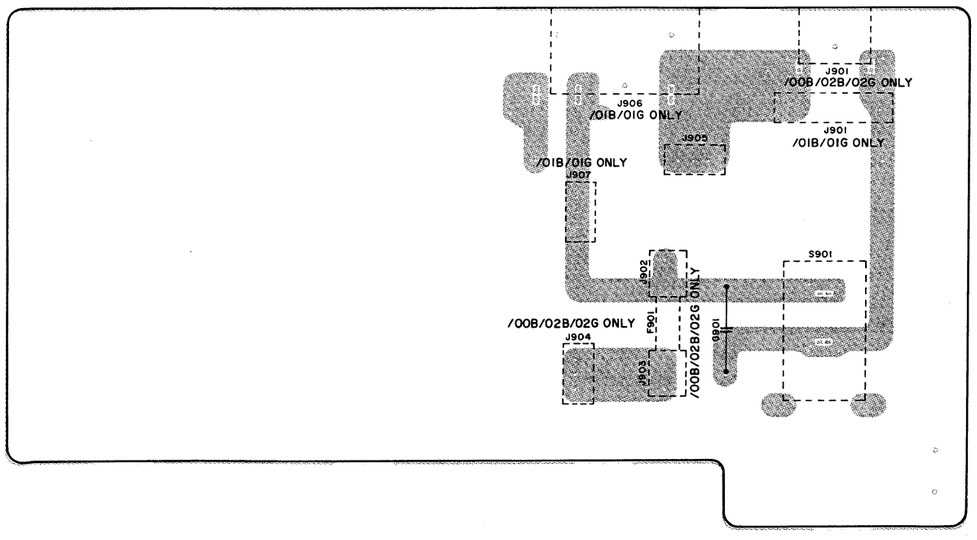

PV01 PHONO AMP, INPUT SEL
Q401 2SK369 BL
Q402 2SK369 BL
Q403 2SK369 BL
Q404 2SK369 BL
Q405-1/2 NJM2068DD
Q405-2/2 NJM2068DD
PHONO (MM/MC)
CD
TUNER
AUX1
AUX2
SV01 INPUT SELECTOR
SV02 REC OUT SELECTOR
SOURCE DIRECT
LV01
DV01 1S176 MA165,etc.
UV23,UV24 028/02G ONLY
P701 POWER AMP, POWER SUPPLY
Q701 AN7062P
Q703 2SA1145 0,Y
Q704 2SA1145 0,Y
Q705 2SC2705 0,Y
Q706 2SC2705 0,Y
Q707 2SD1508
Q708 2SD1508
Q709 2SC2229 0,Y
Q710 2SC2229 0,Y
Q711 2SA1306 0,Y
Q712 2SA949 0,Y
Q713 2SC3298 0,Y
Q714 2SC3298 0,Y
Q715 2SA1306 0,Y
Q716 2SA1306 0,Y
DIFFERENTIAL AMPLIFIER
CASCADE BOOTSTRAP
CURRENT MIRROR
CURRENT SOURCE
EMITTER FOLLOWER
MASTER VOLUME
PG01
RG01 50k(SPECIAL) x2
PY01 LED INDICATOR
DY01~DY05 LT3088
POWER
SOURCE DIRECT
TAPE2
TAPE1
MONO
PJ01 TAPE IN/OUT
TAPE1 IN
TAPE1 OUT
TAPE2 IN
TAPE2 OUT
PS01 TAPE MONI., TONE CONT., SPK. SW
TREBLE
BASS
SOURCE DIRECT TONE DEFAT
PG51
BALANCE VOLUME
SS01-2 MONO
SS01-3 TAPE
SW01 SYSTEM
HEAD PHONE
CHASSIS GND
2SA1302
2SC3281
2SD1508
2SA1306
2SC3298
2SK369
2SA8170
2SC1627
2SA949 2SA1145
2SC2229 2SC2705
SIDE VIEW
TA7317P
TOP VIEW
NJM2068DD
TOP VIEW
AN7062P
NORMAL SIG
SOURCE DIR


P701 POWER AMP, POWER SUPPLY
P801 PRE AMP, POWER SUPPLY
P901
POWER SWITCH AND PRIMALY
MASTER VOLUME
PG01
PY01 LED INDICATOR
PG51
BALANCE VOLUME
SOURCE DIRECT
TONE DEFAT
MONO
TAPE
SYSTEM
HEAD PHONE
SYSTEM 1
SYSTEM 2
Q701 AN7062P
Q707 2SD1508
Q703 2SA1145 0,Y
Q705 2SC2705 0,Y
Q704 2SA1145 0,Y
Q706 2SC2705 0,Y
Q709 2SC2229 0,Y
Q711 2SA949 0,Y
Q713 2SC3298 0,Y
Q715 2SA1306 0,Y
Q717 2SC3281 0,R
Q719 2SA1302 0,Y
Q708 2SD1508
Q710 2SC2229 0,Y
Q712 2SA949 0,Y
Q714 2SC3298 0,Y
Q716 2SA1306 0,Y
Q718 2SC3281 0,Y
Q720 2SA1302 0,Y
QN01 TA7317P
QN02 2SC2240 GR,BL
QN03 2SC2240 GR,BL
QN04 2SA970 GR,BL
Q801 2SC1627 0,Y
Q802 2SA817 0,Y
00B/02B/02G VERSION
01B/01G VERSION
AC 220V/240V T3.15A 250V
AC 110V/120V T6.3A 250V
NORMAL SIGNAL LINE
SOURCE DIRECT SIGNAL LINE
TA7317P
NJM2068DD
AN7062P
2SA1302
2SC3281
2SD1508
2SA1306
2SC3298
2SK369
2SA8170
2SC1627
2SA949 2SA1145
2SC2229 2SC2705

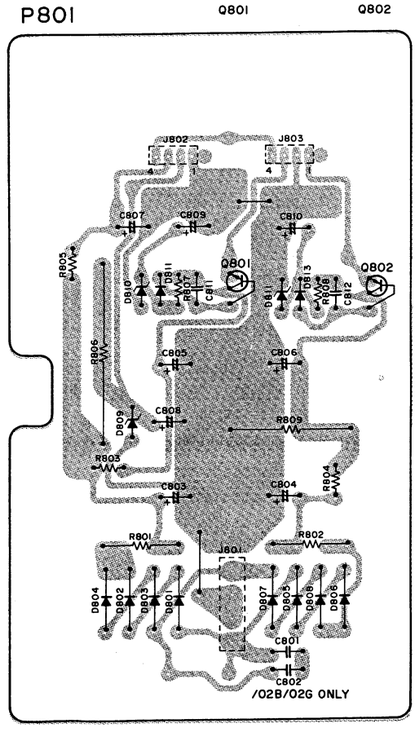
P701




P901 /00B/02B/02G VERSION

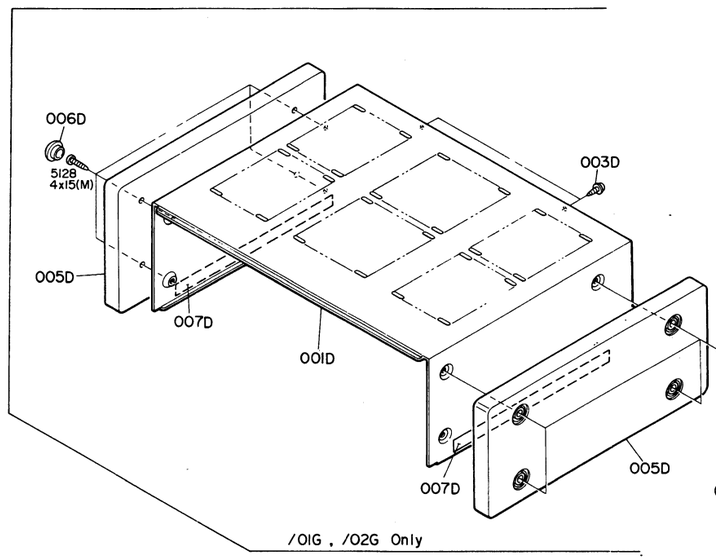


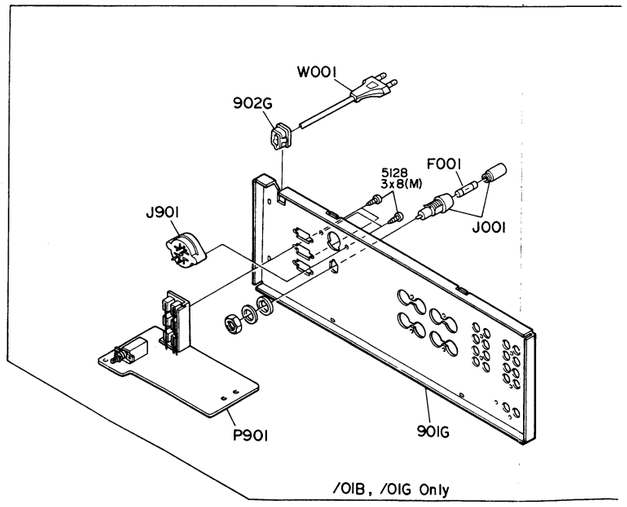

P801

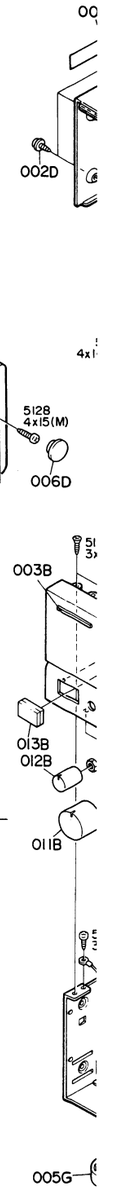


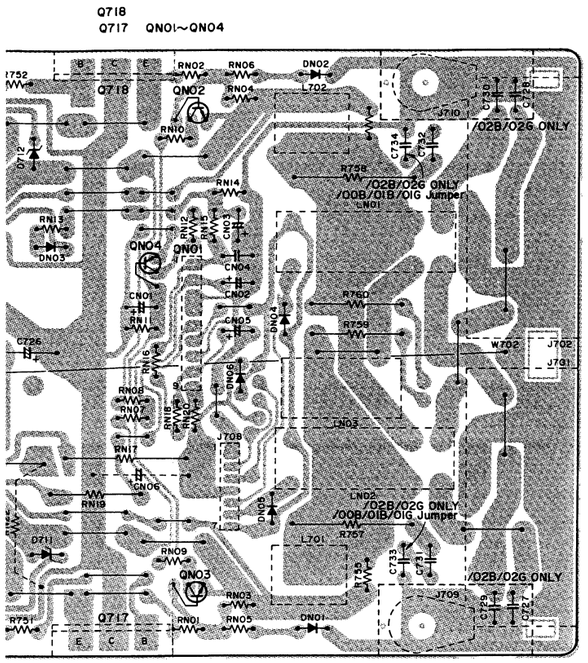


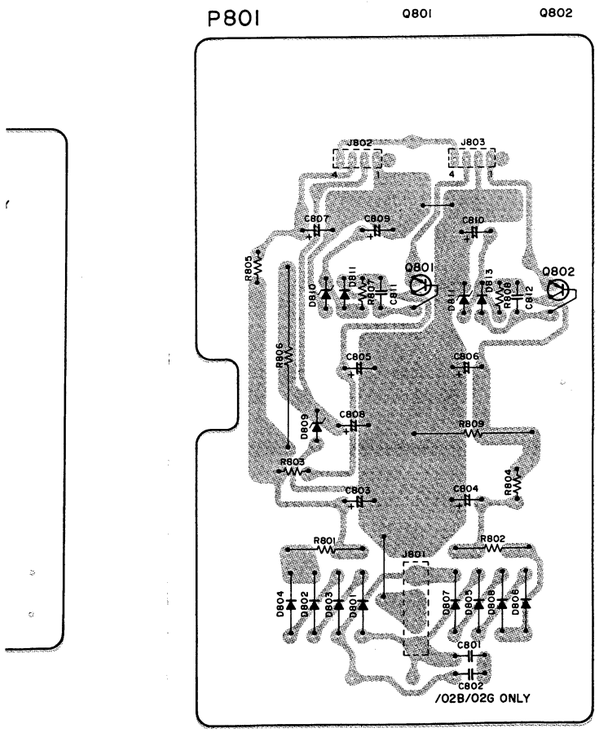

## 3. EXPLODED VIEW AND PARTS LIST





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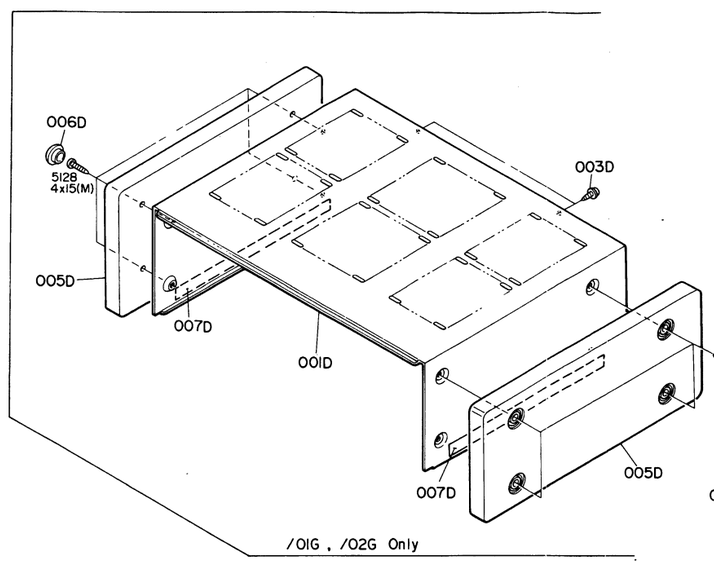
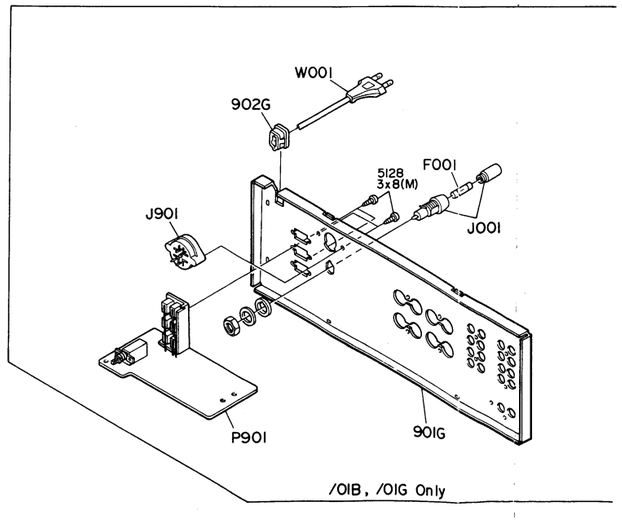
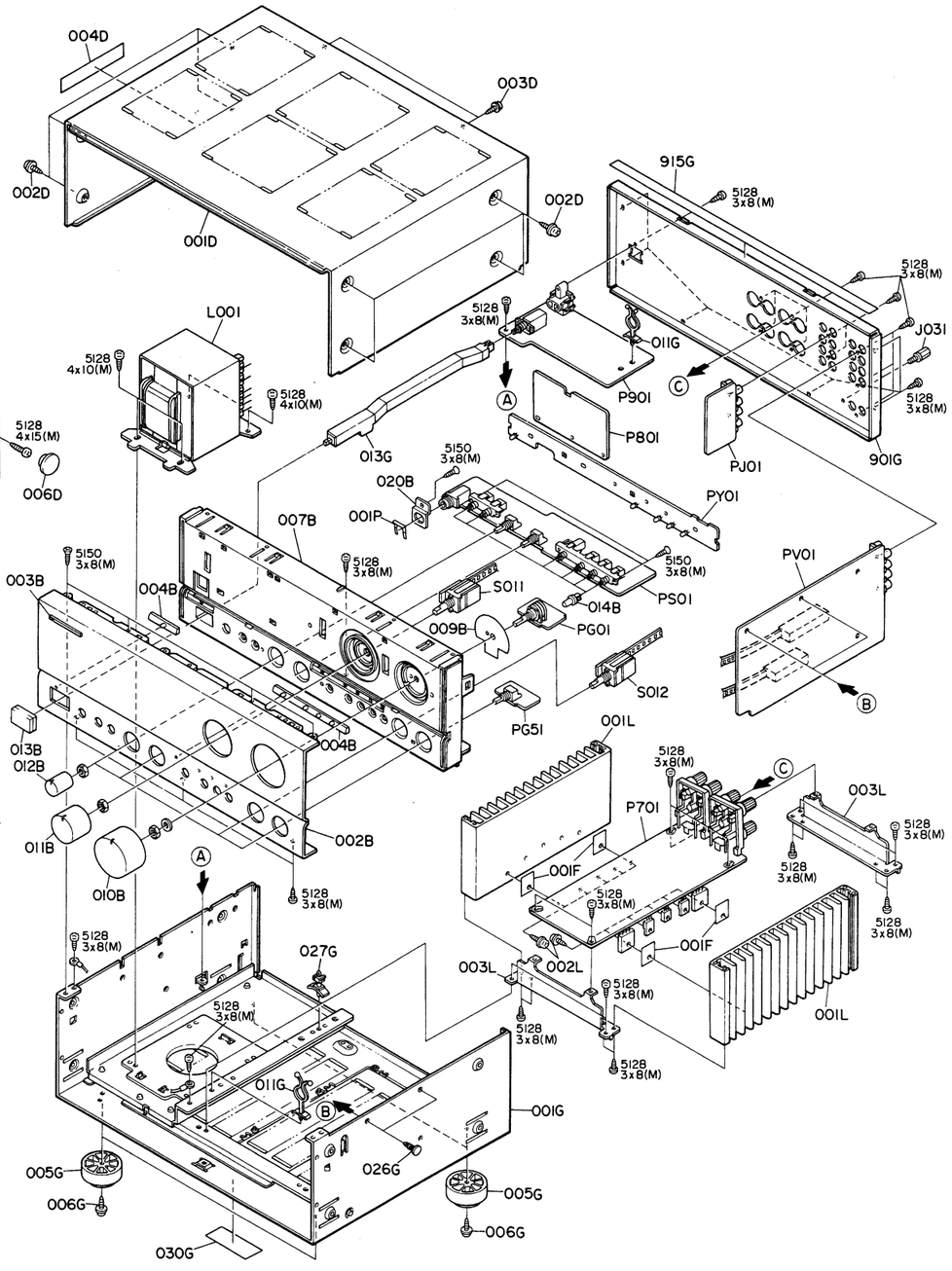


(130J)

| REF. DESIG. | PART NO. | DESCRIPTION |
|---|---|---|
| 002B | 4822 426 51515 | Front Panel /00B/01B/02B |
| | 4822 426 51518 | Front Panel /01G/02G |
| 003B | 4822 454 11825 | Badge /00B/01B/02B |
| | 4822 459 10855 | Badge /01G/02G |
| 004B | 4822 381 11286 | Lens |
| 007B | 4822 464 90712 | Front Chassis /00B/01B/02B |
| | 4822 464 90713 | Front Chassis /01G/02G |
| 010B | 4822 413 41679 | Knob, Volume /00B/01B/02B |
| | 4822 413 41683 | Knob, Volume /01G/02G |
| 011B | 4822 413 41681 | Knob, Selector /00B/01B/02B |
| | 4822 413 41684 | Knob, Selector /01G/02G |
| 012B | 4822 413 41678 | Knob, Tone Control /00B/01B/02B |
| | 4822 413 41682 | Knob, Tone Control /01G/02G |
| 013B | 4822 410 60194 | Button, Power /00B/01B/02B |
| | 4822 410 60358 | Button, Power /01G/02G |
| 014B | 4822 410 60343 | Button, Speaker /00B/01B/02B |
| | 4822 410 60334 | Button, Speaker /01G/02G |
| 020B | 4822 530 80511 | Retainer, Headphone |
| 002D | 4822 501 11008 | B.T. Screw (W/W) B4 x 8 /00B/01B/02B |
| 003D | 4822 502 12511 | B.T. Screw (W/W) B3 x 8 |
| 005D | 4822 426 30148 | Side Panel /01G/02G |
| 006D | 4822 444 60607 | Cap. Side Panel /01G/02G |
| 001F | 4822 466 92249 | Insulator, DENKA SHEET |
| 005G | 4822 462 41383 | Leg |
| 006G | 4822 501 11008 | B.T. Screw (W/W) B4 x 8 |
| 013G | 4822 404 60705 | Link, Power Switch |
| 902G | 4822 532 60948 | Bushing, AC Cord /01B |
| 001P | 4822 401 11351 | Clamper |
| ⚠ F001 | 4822 070 33152 | Fuse, 3.15A 250V /01B/01G |
| ⚠ F002 | 4822 253 30243 | Fuse, 6.3A 250V /01B/01G |
| ⚠ J001 | 4822 256 30233 | Jack, Fuse Holder /01B/01G |
| J031 | 4822 290 40297 | Terminal, GND |
| ⚠ J091 | 4822 272 10227 | Voltage Selector /01B/01G |
| ⚠ J092 | 4822 265 10092 | Jack, AC Adapter /01B/01G |
| ⚠ L001 | 4822 146 21651 | Power Transformer /01B/01G |
| | 4822 146 21649 | Power Transformer /02B/02G |
| | 4822 146 21648 | Power Transformer /00B |
| S011 | 4822 273 10236 | Rotary Switch, Input |
| S012 | 4822 273 10233 | Rotary Switch, Output |
| 001T | 4822 736 21248 | User Manual |

## 4. IDLING CURRENT ADJUSTMENT

(1) Under the power OFF, turn the master volume control fully clockwise to min, and set the balance control and tone controls to center. Set trimmer resistors R735 (left channel) and R736 (right channel) in PC board (P701) to center.

(2) Connect a digital voltmeter ranged direct current to test pins J713 (–) and J715 (+) (left channel), J714 (–) and J716 (+) (right channel) in PC board (P701).

(3) Adjust idling current after setting as above. Turn the power ON, adjust trimmer resistors R735 (left channel) and R736 (right channel) in PC board (P701) while observing the digital voltmeter reading as follows. The initial setting is 16 mV (44.4 mA) for both channels.

**NOTE**

If turn the power ON after cool down condition, the normal unit idling current turns values that 12.5 mV about 30 seconds later, 14.5 mV about 1 minute later and 16 mV about 3 minutes later. This shows idling current is in stabilized condition.

Therefore, to adjust idling current 30 seconds through 1 minute later after the power ON, adjust to 13.5 – 14 mV. One minute through 2 minutes later, adjust to 15.5mV. Two minutes through 3 minutes later, adjust to 16 mV. Three minutes later, adjust to 16 mV (initial condition).

(4) To adjust idling current after heat running, aging or serving, leave the unit under no input signal, no load condition and the power ON for 10 minutes. Then adjust to 16 mV (initial condition).

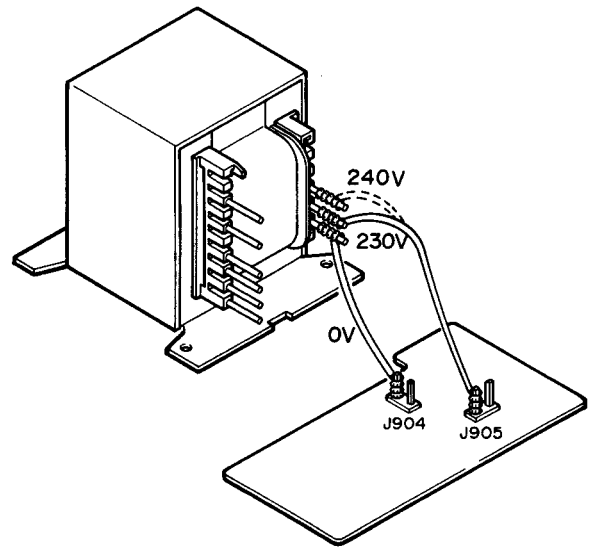
Please refer to the table below.

| Elapsed time after power ON | Idling current setting value |
|---|---|
| 30 sec. – 1 min. | 13.5mV |
| 1 min. – 2 min. | 15.5mV |
| 2 min. – 3 min. | 16 mV |
| More than 3 min. | 16 mV |

**Note on Safety:**
Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazared.

## 5. CHANGING OPERATION VOLTAGE TO 240V

The transformer of the PM-72/00B Version has two kind of taps, 230V or 240V. The operating voltage is factory set to 230V. The operating voltage can be changed to 240V by changing the wiring to the transformer.
In that case, be sure to put the label signs 240V on the voltage indication part of the rear panel.



## 6. TEST EQUIPMENT REQUIRED FOR SERVICING

| Item | Use |
|---|---|
| Distortion Analyzer | Distortion measurements |
| Audio Oscillator | Sinewave and squarewave signal source |
| ACVTVM | Voltage measurements (AC) |
| Oscilloscope | Waveform analysis and trouble shooting and ASO alignment |
| Circuit Tester | Trouble shooting |
| DCVTVM | Voltage measurements (DC) |
| AC Wattmeter | Monitors primary power to amplifier |
| Line Voltmeter | Monitors potential of primary power to amplifier |
| Variable Autotransformer | Adjust level of primery power to amplifier |
| Shorting Plug | Shorts amplifier input to eliminate noise pickup |

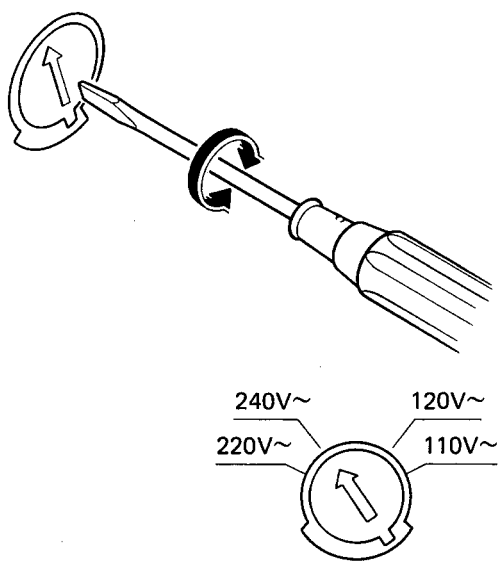
## 7. VOLTAGE CONVERSION

- **EUROPEAN MODEL ONLY**

To convert the unit to a different power source voltage, change the position as illustrated in the drawing below.

**VOLTAGE SELECTOR**

**CAUTION**
DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.



# 8. ELECTRICAL PARTS LIST

## ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

R***: (1) GD05---140, Carbon film fixed resistor, ±5%, 1/4W
R***: (2) GD05---160, Carbon film fixed resistor, ±5%, 1/6W

① — Resistance value

Examples

① Resistance value

| | | | |
|---|---|---|---|
| 0.1Ω...001 | 10Ω...100 | 1kΩ...102 | 100kΩ...104 |
| 0.5Ω...005 | 18Ω...180 | 2.7kΩ...272 | 680kΩ...684 |
| 1Ω...010 | 100Ω...101 | 10kΩ...103 | 1MΩ...105 |
| 6.8Ω...068 | 390Ω...391 | 22kΩ...223 | 4.7MΩ...475 |

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C***: CERAMIC CAP.

(1) DD1---370, Ceramic condenser, Disc type, Temp. coeff. P350 ~ N1000, 50V
① ② — ① Capacity value, ② Tolerance

Examples

① Tolerance (Capacity deviation)
±0.25pF...0
±0.5pF...1
±5%...5

* Tolerance of COMMON PARTS handled here are as follows:
0.5pF ~ 5pF...±0.25pF
6pF ~ 10pF...±0.5pF
12pF ~ 560pF...±5%

② Capacity value

| | | |
|---|---|---|
| 0.5pF...005 | 3pF...030 | 100pF...101 |
| 1pF...010 | 10pF...100 | 220pF...221 |
| 1.5pF...015 | 47pF...470 | 560pF...561 |

C***: CERAMIC CAP.

(1) DK16---300, High dielectric constant ceramic condenser, Disc type, Temp. chara. 2B4, 50V
① — Capacity value

Example

② Capacity value

| | | |
|---|---|---|
| 100pF...101 | 1000pF...102 | 10000pF...103 |
| 470pF...471 | 2200pF...222 | |

C***: ELECTROLY CAP. ( ⧧ ), FILM CAP. ( ⧦ )

(1) EA------10, Electrolytic condenser, One-way lead type, Tolerance ±20%
① ② — ① Dielectric strength, ② Capacity value

Examples

① Capacity value

| | | |
|---|---|---|
| 0.1μF...104 | 4.7μF...475 | 100μF...107 |
| 0.33μF...334 | 10μF...106 | 330μF...337 |
| 1μF...105 | 22μF...226 | 1100μF...108 |
| | | 2200μF...228 |

② Working voltage

| | |
|---|---|
| 6.3V...006 | 25V...025 |
| 10V...010 | 35V...035 |
| 16V...016 | 50V...050 |

(2) DF15---350, Plastic film condenser, One-way type, Mylar ±5% 50V
① — Capacity value

Examples

① Capacity value

| | |
|---|---|
| 0.001μF (1000pF)...102 | 0.1μF...104 |
| 0.0018μF.....182 | 0.56μF...564 |
| 0.01μF.....103 | 1μF...105 |
| 0.015μF.....153 | |

(130J)

| REF. DESIG. | PART NO. | DESCRIPTION |
|---|---|---|
| | | **PG01-MASTER VOLUME CIRCUIT BOARD** |
| RG01 | 4822 101 30653 | Variable Resistor 50KΩ, Special |
| | | **PG51-BALANCE VOLUME CIRCUIT BOARD** |
| RG51 | 4822 100 30138 | Variable Resistor 100KΩ(MN) |
| | | **PJ01-TAPE IN/OUT CIRCUIT BOARD** |
| CJ01 ~ CJ04 | 4822 122 32486 | Ceramic Cap. 0.01μF +80% −20% |
| JJ01 | 4822 266 30284 | Terminal, 4P; RCA |
| JJ02 | 4822 266 30284 | Terminal, 4P; RCA |
| | | **PS01-TAPE MONI./TONE CONT./SPK. CIRCUIT BOARD** |
| CE09 | 4822 124 90352 | Elect Cap. 10μF 16V |
| CE10 | 4822 124 90352 | Elect Cap. 10μF 16V |
| CW01 | 4822 122 32486 | Ceramic Cap. 0.01μF +80% −20% /02B/02G |
| CW02 | 4822 122 32486 | Ceramic Cap. 0.01μF +80% −20% /02B/02G |
| CW03 | 4822 122 32486 | Ceramic Cap. 0.01μF +80% −20% |
| RE13 | 4822 100 30139 | Variable Resistor 50KΩ(C) |
| RE14 | 4822 100 30139 | Variable Resistor 50KΩ(C) |
| RW01 | 4822 116 60331 | Resistor 1KΩ 1W |
| RW02 | 4822 116 60331 | Resistor 1KΩ 1W |
| JW01 | 4822 267 31274 | Jack, Headphone /00B/01B/02B |
| | 4822 267 31365 | Jack, Headphone /01G/02G |
| SS01 | 4822 276 13165 | Push Switch |
| SW01 | 4822 276 13164 | Push Switch |
| | | **PV01-PHONO AMP/INPUT SELECT CIRCUIT BOARD** |
| | | **PV01-CAPACITORS** |
| CV01 ~ CV08 | 4822 122 32486 | Ceramic 0.01μF +80% −20% |
| C401 | 4822 122 32486 | Ceramic 0.01μF +80% −20% |
| C402 | 4822 122 32486 | Ceramic 0.01μF +80% −20% |
| C403 | 4822 121 51037 | Film 150pF ±5% /00B/01B/01G |
| C404 | 4822 121 51037 | Film 150pF ±5% /00B/01B/01G |
| C405 | 4822 121 41518 | Film 470pF ±5% |
| C406 | 4822 121 41518 | Film 470pF ±5% |
| C407 | 4822 124 90359 | Elect 100μF 10V |
| C408 | 4822 124 90359 | Elect 100μF 10V |

| REF. DESIG. | PART NO. | DESCRIPTION |
|---|---|---|
| C409 | 4822 124 22694 | Elect 1000μF 6.3V |
| C410 | 4822 124 22694 | Elect 1000μF 6.3V |
| C411 | 4822 121 42764 | Film 0.047μF ±5% |
| C412 | 4822 121 42764 | Film 0.047μF ±5% |
| C413 | 4822 121 42755 | Film 0.012μF ±5% |
| C414 | 4822 121 42755 | Film 0.012μF ±5% |
| C415 | 4822 121 42758 | Film 1800pF ±5% |
| C416 | 4822 121 42758 | Film 1800pF ±5% |
| C417 | 4822 124 90358 | Elect 22μF 16V |
| C418 | 4822 124 90358 | Elect 22μF 16V |
| C419 | 4822 124 90365 | Elect 220μF 25V |
| C420 | 4822 124 90365 | Elect 220μF 25V |
| C421 | 4822 121 42763 | Film 3900pF ±5% |
| C422 | 4822 121 42763 | Film 3900pF ±5% |
| C425 | 4822 122 32486 | Ceramic 0.01μF +80% −20% |
| C427 | 4822 122 32486 | Ceramic 0.01μF +80% −20% |
| | | **PV01-RESISTORS** |
| R407 ≀ R410 | 4822 116 53691 | 4.64KΩ ±1% 1/6W |
| R413 | 4822 116 53691 | 4.64KΩ ±1% 1/6W |
| R414 | 4822 116 53691 | 4.64KΩ ±1% 1/6W |
| ▲ R431 | 4822 111 90731 | 47Ω ±2% ¼W, Fuse |
| ▲ R432 | 4822 111 90731 | 47Ω ±2% ¼W, Fuse |
| | | **PV01-SEMICONDUCTORS** |
| DV01 | 4822 130 33305 | Diode MA165, etc. |
| Q401 ≀ Q404 | 4822 130 42839 | F.E.T. 2SK369(BL) |
| Q405 | 4822 209 73064 | IC NJM2068DD |
| | | **PV01-MISCELLANEOUS** |
| J401 | 4822 266 30282 | Terminal, 2P; RCA |
| JV01 | 4822 266 30282 | Terminal, 2P; RCA |
| JV02 | 4822 266 30285 | Terminal, 6P; RCA |
| LV01 | 4822 280 20464 | Relay |
| L401 | 4822 156 11019 | Choke Coil 320μH /02B/02G |
| L402 | 4822 156 11019 | Choke Coil 320μH /02B/02G |
| SV01 | 4822 277 21352 | Slide Switch, Input |
| SV02 | 4822 277 20832 | Slide Switch, Rec Out |
| | | **PY01-LED INDICATOR CIRCUIT BOARD** |
| DY01 ≀ DY05 | 4822 130 80326 | L.E.D. LT3D8B |
| | | **P701-POWER AMP/POWER SUPPLY CIRCUIT BOARD** |
| | | **P701-CAPACITORS** |
| C701 | 4822 121 41518 | Film 470pF ±5% /00B/01B/01G |
| C702 | 4822 121 41518 | Film 470pF ±5% /00B/01B/01G |
| C703 | 4822 124 90361 | Elect 22μF 25V |
| C704 | 4822 124 90361 | Elect 22μF 25V |
| C705 | 4822 126 10364 | Ceramic 100pF ±10% |
| C706 | 4822 126 10364 | Ceramic 100pF ±10% |
| C707 | 4822 124 90362 | Elect 22μF 50V |
| C708 | 4822 124 90362 | Elect 22μF 50V |
| C709 | 4822 126 11552 | Ceramic 12pF ±5% |
| C710 | 4822 126 11552 | Ceramic 12pF ±5% |

| REF. DESIG. | PART NO. | DESCRIPTION |
|---|---|---|
| C711 | 4822 126 10512 | Ceramic 15pF ±5% |
| C712 | 4822 126 10512 | Ceramic 15pF ±5% |
| C715 | 4822 124 90361 | Elect 22μF 25V |
| C716 | 4822 124 90363 | Elect 220μF 10V |
| C717 | 4822 124 22724 | Elect 330μF 100V |
| C718 | 4822 124 22724 | Elect 330μF 100V |
| C719 | 4822 124 90354 | Elect 100μF 16V |
| C720 | 4822 124 90354 | Elect 100μF 16V |
| C721 ≀ C724 | 4822 121 51036 | Film 100pF ±5% |
| ▲ C725 | 4822 124 23927 | Elect 10000μF 71V |
| ▲ C726 | 4822 124 23927 | Elect 10000μF 71V |
| C727 ≀ C730 | 4822 122 32486 | Ceramic 0.01μF +80% −20% /02B/02G |
| C735 | 4822 124 90354 | Elect 100μF 16V |
| C736 | 4822 124 90354 | Elect 100μF 16V |
| CN01 | 4822 124 22273 | Elect 0.47μF 50V |
| CN02 | 4822 124 41539 | Elect 47μF 16V |
| CN03 | 4822 124 41543 | Elect 1μF 50V |
| CN05 | 4822 124 41539 | Elect 47μF 16V |
| CN06 | 4822 124 23994 | Elect 33μF 100V |
| G701 | 4822 122 30043 | Ceramic 0.01μF +80% −20% /01B/02B/01G/02G |
| | 4822 126 11235 | Composit 0.047μF/6.8Ω /00B |
| | | **P701-RESISTORS** |
| R715 | 4822 050 23303 | 33KΩ ±5% ¼W |
| R716 | 4822 050 23303 | 33KΩ ±5% ¼W |
| R719 | 4822 116 60437 | 4.7KΩ ±5% 2W |
| R735 | 4822 100 20681 | 2.2KΩ, Trimming |
| R736 | 4822 100 20681 | 2.2KΩ, Trimming |
| R737 ≀ R740 | 4822 111 91285 | 100Ω ±5% 1/6W |
| R743 ≀ R746 | 4822 111 91291 | 10Ω ±5% 1/6W |
| R747 | 4822 111 91002 | 0.18Ωx2, Composit |
| R748 | 4822 111 91002 | 0.18Ωx2, Composit |
| ▲ R749 | 4822 116 60494 | 330Ω ±5% 2W, Metal |
| ▲ R750 | 4822 116 60494 | 330Ω ±5% 2W, Metal |
| ▲ R751 ≀ ▲ R754 | 4822 050 22208 | 2.2Ω ±5% ¼W |
| R755 | 4822 050 22201 | 220Ω ±5% ¼W |
| R756 | 4822 050 22201 | 220Ω ±5% ¼W |
| R757 | 4822 116 83353 | 10Ω ±5% 3W, Metal |
| R758 | 4822 116 83353 | 10Ω ±5% 3W, Metal |
| R759 | 4822 116 60494 | 330Ω ±5% 2W, Metal |
| R760 | 4822 116 60494 | 330Ω ±5% 2W, Metal |
| ▲ R761 | 4822 116 60313 | 10Ω ±5% ½W, Fuse |
| ▲ R762 | 4822 116 60313 | 10Ω ±5% ½W, Fuse |
| RN01 | 4822 111 91257 | 1KΩ ±5% 1/6W |
| RN02 | 4822 111 91257 | 1KΩ ±5% 1/6W |
| ▲ RN13 | 4822 113 90119 | 22Ω ±2% ¼W, Fuse |
| RN17 | 4822 116 60447 | 180Ω ±5% 2W |
| RN19 | 4822 116 60344 | 18KΩ ±5% 1W |
| RN21 | 4822 116 60447 | 180Ω ±5% 2W |
| RN22 | 4822 116 60447 | 180Ω ±5% 2W |

| REF. DESIG. | PART NO. | DESCRIPTION |
|---|---|---|
| | | **P701-SEMICONDUCTORS** |
| D701 | 4822 130 80273 | Zener RD8.2JB2/MTZJ8.2C |
| D702 | 4822 130 80322 | Zener RD15JB3/MTZJ16A |
| D703 ~ D710 | 4822 130 33305 | Diode MA165, etc. |
| D711 ~ D714 | 4822 130 80273 | Zener RD8.2JB2/MTZJ8.2C |
| ▲ D715 | 4822 130 33132 | Diode D5FB20 |
| DN01 | 4822 130 80837 | Diode HSS81 |
| DN02 | 4822 130 80837 | Diode HSS81 |
| DN03 | 4822 130 80839 | Diode S5688G |
| DN04 | 4822 130 33305 | Diode MA165, etc. |
| DN05 | 4822 130 33305 | Diode MA165, etc. |
| DN06 | 4822 130 33305 | Diode MA165, etc. |
| ▲ Q701 | 4822 209 83732 | IC AN7062P |
| Q703 | 4822 130 42999 | Transistor 2SA1145(O, Y) |
| Q704 | 4822 130 42999 | Transistor 2SA1145(O, Y) |
| Q705 | 4822 130 43283 | Transistor 2SC2705(O, Y) |
| Q706 | 4822 130 43283 | Transistor 2SC2705(O, Y) |
| Q707 | 4822 130 60526 | Transistor 2SD1508 |
| Q708 | 4822 130 60526 | Transistor 2SD1508 |
| ▲ Q709 | 4822 130 43225 | Transistor 2SC2229(O, Y) |
| ▲ Q710 | 4822 130 43225 | Transistor 2SC2229(O, Y) |
| ▲ Q711 | 4822 130 42941 | Transistor 2SA949(O, Y) |
| ▲ Q712 | 4822 130 42941 | Transistor 2SA949(O, Y) |
| ▲ Q713 | 4822 130 60525 | Transistor 2SC3298(O, Y) |
| ▲ Q714 | 4822 130 60525 | Transistor 2SC3298(O, Y) |
| ▲ Q715 | 4822 130 60524 | Transistor 2SA1306(O, Y) |
| ▲ Q716 | 4822 130 60524 | Transistor 2SA1306(O, Y) |
| ▲ Q717 | 4822 130 61747 | Transistor 2SC3281(O, R) |
| ▲ Q718 | 4822 130 61747 | Transistor 2SC3281(O, R) |
| ▲ Q719 | 4822 130 42123 | Transistor 2SA1302(O, R) |
| ▲ Q720 | 4822 130 42123 | Transistor 2SA1302(O, R) |
| ▲ QN01 | 4822 209 83312 | IC TA7317P |
| QN02 | 4822 130 43233 | Transistor 2SC2240(GR, BL) |
| QN03 | 4822 130 43233 | Transistor 2SC2240(GR, BL) |
| QN04 | 4822 130 42951 | Transistor 2SA970(GR, BL) |
| | | **P701-MISCELLANEOUS** |
| J701 | 4822 290 60837 | Terminal, Speaker /00B/01B/01G |
| | 4822 290 60841 | Terminal, Speaker /02B/02G |
| J702 | 4822 290 60836 | Terminal, Speaker /00B/01B/01G |
| | 4822 290 60839 | Terminal, Speaker /02B/02G |
| L701 | 4822 157 63085 | Air Coil |
| L702 | 4822 157 63085 | Air Coil |
| LN01 | 4822 280 70354 | Relay |
| LN02 | 4822 280 70354 | Relay |
| LN03 | 4822 280 20196 | Relay |
| | | **P801-PRE AMP/POWER SUPPLY CIRCUIT BOARD** |
| | | **P801-CAPACITORS** |
| ▲ C801 | 4822 122 32486 | Ceramic 0.01μF +80% −20% |
| ▲ C802 | 4822 122 32486 | Ceramic 0.01μF +80% −20% /02B/02G |
| C803 | 4822 124 41541 | Elect 470μF 35V |
| C804 | 4822 124 41541 | Elect 470μF 35V |
| C805 | 4822 124 41538 | Elect 220μF 35V |
| C806 | 4822 124 41538 | Elect 220μF 35V |
| C807 | 4822 124 41536 | Elect 100μF 35V |
| C808 | 4822 124 41537 | Elect 220μF 6.3V |
| C809 | 4822 124 41535 | Elect 100μF 25V |

| REF. DESIG. | PART NO. | DESCRIPTION |
|---|---|---|
| C810 | 4822 124 41535 | Elect 100μF 25V |
| C811 | 4822 122 32486 | Ceramic 0.01μF +80% −20% |
| C812 | 4822 122 32486 | Ceramic 0.01μF +80% −20% |
| | | **P801-RESISTORS** |
| ▲ R801 | 4822 050 21008 | 1Ω ±5% ¼W |
| ▲ R802 | 4822 050 21008 | 1Ω ±5% ¼W |
| ▲ R805 | 4822 116 82051 | 150Ω ±2% ¼W |
| ▲ R806 | 4822 116 60491 | 330Ω ±5% 3W |
| R807 | 4822 111 91423 | 1.2KΩ ±5% ¼W |
| R808 | 4822 111 91423 | 1.2KΩ ±5% ¼W |
| ▲ R809 | 4822 116 60332 | 1KΩ ±5% 2W |
| | | **P801-SEMICONDUCTORS** |
| ▲ D801 | 4822 130 32508 | Diode RL103E/DSF10C |
| ▲ D802 | 4822 130 32508 | Diode RL103E/DSF10C /02B/02G |
| ▲ D803 | 4822 130 32508 | Diode RL103E/DSF10C |
| ▲ D804 | 4822 130 32508 | Diode RL103E/DSF10C /02B/02G |
| ▲ D805 | 4822 130 32508 | Diode RL103E/DSF10C |
| ▲ D806 | 4822 130 32508 | Diode RL103E/DSF10C /02B/02G |
| ▲ D807 | 4822 130 32508 | Diode RL103E/DSF10C |
| ▲ D808 | 4822 130 32508 | Diode RL103E/DSF10C /02B/02G |
| D809 | 4822 130 80317 | Zener RD5.1JB2/MTZJ5.1B |
| D810 | 4822 130 80838 | Zener RD18JB2/MTZJ18C |
| D811 | 4822 130 80838 | Zener RD18JB2/MTZJ18C |
| D812 | 4822 130 33305 | Diode MA165, etc. |
| D813 | 4822 130 33305 | Diode MA165, etc. |
| Q801 | 4822 130 60696 | Transistor 2SC1627(O, Y) |
| Q802 | 4822 130 60693 | Transistor 2SA817(O, Y) |
| | | **P901-POWER SWITCH/PRIMALY CIRCUIT BOARD** |
| ▲ F901 | 4822 070 33152 | Fuse 3.15A 250V /00B/02B/02G |
| ▲ G901 | 4822 121 43732 | Film Cap. 0.01μF ±20% |
| ▲ J901 | 4822 267 31416 | Jack, AC Inlet /00B/02B/02G |
| ▲ J906 | 4822 267 31417 | Jack, AC Outlet /01B/01G |
| ▲ S901 | 4822 276 12924 | Push Switch, Power |

**NOTE ON SAFETY:**
**Symbol ▲ Fire or electrical shock hazard. Only original parts should be uned to replace any part marked with symbol ▲. Any other component substitution (other than original type), mayincrease risk of fire or electrical shock hazard.**